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SPA INSTALLATION MANUAL

120/240 VOLT 60HZ SPA EQUIPMENT FOR PORTABLE SPAS

INSTALLATION CONSIDERATIONS

It is highly recommended that the owner / user of this spa carefully read all instructions in this manual prior to having your spa installed at your chosen location.

Improper Installation may result in equipment damage and void the warranty.

SURFACE AND PAD REQUIREMENTS FOR SPA INSTALLATION

- A.** Your new spa must be placed on a uniformly firm and level surface. A concrete pad 4 inches thick is the only recommended foundation. The logical time to plumb in electrical conduit is before the concrete pad is poured. Insure that the concrete has cured at least one week before the spa is installed. A typical spa filled with water can weigh as much as two and one half tons. This weight can crack uncured concrete. Uneven or cracked concrete pad (or the use of shims) may cause the spa to buckle, distort or crack. Installing your spa on uneven or cracked surfaces may void the warranty on your spa.
- B.** If your spa is located near water sprinklers, adjust them so the water will not hit the siding of the spa.
- C.** Balconies and decks must be constructed to current State and local codes. They must support at least 75 pounds per square foot.
- D.** Gates giving access to the spa must be self-closing and self locking.
- E.** It is the responsibility of the spa owner to provide clear access on all sides of the spa for serviceability. If service is required and access is not provided, additional costs may be incurred if repair is required.

INSTALLATION

1. ELECTRICAL INSTALLATION REQUIREMENTS

HAVE YOUR ELECTRICIAN READ BEFORE INSTALLATION BEGINS!

ELECTRICAL CONNECTIONS MADE IMPROPERLY WILL VOID WARRANTY AND MAY BE UNSAFE. GROUND FAULT PROTECTION IS PROVIDED FOR ALL ELECTRICAL PARTS WITHIN MOST UNITS HOWEVER, IF YOUR SPA CONTROL DOES NOT HAVE A GFCI IN IT YOU MUST INSTALL AN EXTERNAL GROUND FAULT CIRCUIT INTERRUPTER (GFCI).

It is the responsibility of the spa owner to insure that electrical connections are made by a qualified electrician in accordance with the National Electric Code and any local and State Electrical Codes in force at the time of installation. These connections must be made in accordance with the wiring diagrams found inside the control box and the wiring diagrams within this manual. This equipment has been designed to operate on 60Hz alternating current only and at 120 Volts or 240 Volts as required. Make sure that power is not applied while performing any electrical installation. A copper bonding lug has been provided on the electrical equipment pack to allow connection to local grounded points. The ground wire must be at least 8 gauge solid copper and must be connected securely to a grounded metal structure. For units intended for use in other than single-family dwellings, a clearly labeled emergency switch shall be provided as part of the installation. The switch shall be readily accessible to the occupants and shall be installed at least 5 feet away, adjacent to, and within sight of, the unit.

2. WIRE AND CIRCUIT BREAKER SIZING FOR EQUIPMENT OPTIONS

A. Electric heater (30/20 Amp or 60 Amp operation is selectable by a switch within the equipment)

1. For 120 volt one pump systems use a 20 Amp circuit breaker and **12** gauge wire.
(HEATING CAPACITY IS LOST IN ALL FUNCTIONS EXCEPT FILTER FUNCTION WITH 20 AMP CIRCUIT BREAKER. ENSURE THAT THE SPA IS SET FOR 20A. The amperage for the spa may be selected from the control panel by setting the temperature to 71 degrees and then push the light and jets A buttons at the same time. Press the UP temp button to change setting to the lowest setting. Wait 6 seconds and then select another temperature different than 71F.)
2. For 240 volt systems use a 60 Amp circuit breaker and **6** gauge wire.
(60 AMPS ALLOWS HEATING IN ALL FUNCTIONS POSSIBLE. SELECT 60A from the spaside. The amperage for the spa may be selected from the control panel by setting the temperature to 71 degrees and then push the light and jets A buttons at the same time. Press the UP temp button to change setting to the lowest setting. Wait 6 seconds and then select another temperature different than 71F.)

OR

3. For 240 volt systems use a 30 Amp circuit breaker and **8** gauge wire.
(HEATING CAPACITY IS LOST IN ALL FUNCTIONS EXCEPT FILTER FUNCTION WITH 30 AMP CIRCUIT BREAKER. ENSURE THAT THE SPA IS SET TO 30A or 20A. The amperage for the spa may be selected from the control panel by setting the temperature to 71 degrees and then push the light and jets A buttons at the same time. Press the UP temp button to change setting to the lowest setting. Wait 6 seconds and then select another temperature different than 71F.)

B. Gas heater

1. For 120 volt one pump systems use a 20 Amp circuit breaker and **12** gauge wire.
2. For 240 volt two pump systems use 30 Amp circuit breaker and **10** gauge wire with 12 Amp pumps.
3. For 240 volt two pump systems use 50 Amp circuit breaker and **8** gauge wire with 16.6 Amp pumps.

3. 120 VOLT INSTALLATION WITH ELECTRIC HEATER

120 Volt equipment is supplied with a cord for connection to a grounded 20 Amp receptacle. The circuit that this receptacle is connected to must not have other appliances connected to it because the spa requires the full 20 Amps to operate correctly. No modification to the spa electrical system is required for 120 volt installation. Under no circumstances shall an extension cord be used to extend the power cord from the spa electrical equipment. Use of an extension cord will invalidate the warranty and will damage the electrical components. In addition, use of an extension cord will present an electrical hazard to the spa user.

4. 240 VOLT INSTALLATION WITH ELECTRIC HEATER

USE 6 GAUGE WIRE FOR 60 AMP OPERATION, NOT 8 GAUGE WIRE.

Units to be operated on 240 Volts must be connected to a circuit that has three wires plus a ground. Copper conductors are required. These wires are used for: line 1, line 2, neutral and ground. Spas on 240 Volts require a separate circuit and other appliances (such as cloth dryers or air conditioners) must not be connected to this circuit. A qualified electrician according to the codes must perform all 240 Volt installations in effect at the time of installation. **All two-pump spa systems must be installed utilizing 240 volts.**

5. CONVERTING ELECTRIC HEATERS FROM 120 TO 240 VOLTS

- A. Remove the equipment cover from the front of the electrical control box.
- B. Disconnect the 120 Volt power cord. Remove the power cord and white jumper wire on the line side of the power input terminal block from the control box and discard.
- C. Connect the four properly sized wires to the power terminals of the electrical equipment as shown in this manual or that are found on the inside cover of the electrical equipment. **BE SURE THESE CONNECTIONS ARE TIGHT.**
- D. IF 60 Amp service is connected to the spa, set the 30/60 Amp switch to 60A.

6. GAS LINE REQUIREMENTS FOR GAS HEATERS (50,000 BTU UNITS)

- A. Gas lines must be run to within 3 feet of the spa gas heater.
- B. If the gas line run is less than 50 feet from the gas meter, use 1/2 inch line.
- C. If the gas line is over 50 feet from the gas meter, use 3/4 inch line.
- D. It is the spa purchaser's responsibility for the gas line installation and permits.

7. 120 VOLT INSTALLATION WITH GAS HEATER

120 Volt equipment is supplied with a cord for connection to a grounded 20 Amp receptacle. The circuit that this receptacle is connected to must not have other appliances connected to it because the spa requires the full 20 Amps to operate correctly. Ensure that the option switch on the control circuit board inside the electrical control box is set for 60 Amp (**Gas heater**).

8. 240 VOLT INSTALLATION WITH GAS HEATER (USE 10 GAUGE WIRE!)

Units to be operated on 240 Volts must be connected to a circuit that has three wires plus a ground. Copper conductors are required. These wires are used for: line 1, line 2, neutral and ground. Spas on 240 Volts require a separate circuit and other appliances (such as cloth dryers or air conditioners) must not be connected to this circuit. A qualified electrician according to the codes must perform all 240 Volt installations in effect at the time of installation. **All two pump spa systems must be installed with 240 volts.** Ensure that the 60A current option has been selected from the spaside panel. The amperage for the spa may be selected from the control panel by setting the temperature to 71 degrees and then push the light and jets A buttons at the same time. Press the UP temp button to change setting to the lowest setting. Wait 6 seconds and then select another temperature different than 71F (**Gas heater**) during the 240-volt installation.

MAKE SURE THE GAS HEATER HAS BEEN SET UP FOR 120 VOLTS OR THE ELECTRICAL COMPONENTS MAY BE DAMAGED IN THE GAS HEATER. ALL CONTROL UNITS PROVIDE 120 VOLTS TO THE GAS HEATER EVEN IF THE CONTROL IS CONNECTED TO 240 VOLTS.

9. GENERAL INFORMATION ABOUT YOUR CONTROL

Follow the instructions above for the control installation above so that the proper settings are made for current and voltage that the spa was connected to. The electronic control was shipped with the temperature sensor mounted in the heater housing and does not require the connection of the temperature sensor mounted in the spa.

The control enclosure should be installed such that the heater housing is in a level, horizontal position and the bottom of the enclosure is approximately four inches above ground level.

The left side of the control enclosure holds the connectors used for the light, pump(s), ozonator, air blower and circulation pump as offered by the applicable pack configuration. Also routed through the left side of the enclosure are the control panel cable, remote panel cable if applicable, and the freeze protection sensor if present. **All cables must be routed to avoid crimping or pressure either from the shell or any of the support members. Avoid routing cables below the spa shell.** There may appear to be sufficient clearance for cables to be under the spa, but filled

with water and aged, the supports will flex. Compression of the cables can produce erratic behavior and even equipment damage.

All models of spasides supplied after Jan 1, 2000 offer spa water temperature display and can operate the spa using the temperature sensor that is factory mounted within the heater housing. The temperature display will only be accurate while the heater pump is running; otherwise the temperature displayed will be that of the heater.